

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/043792

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61K39/095 A61P43/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | <p>US 5 084 561 A (WOLFGANG BREDT ET AL.) 28 January 1992 (1992-01-28) column 2, line 25 - line 38 column 3, line 10 - line 33 ----- -/--</p> | 1-10 |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
 "E" earlier document but published on or after the international filing date
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
 "O" document referring to an oral disclosure, use, exhibition or other means
 "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
 "&" document member of the same patent family

Date of the actual completion of the international search

31 May 2005

Date of mailing of the international search report

19 -08- 2005

Name and mailing address of the ISA

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|---|
| X | <p>IDAAN-HEIKKILA I ET AL: "Immunization with meningococcal class 1 outer membrane protein produced in Bacillus subtilis and reconstituted in the presence of Zwittergent or Triton X-100" VACCINE, BUTTERWORTH SCIENTIFIC. GUILDFORD, GB, vol. 14, no. 9, June 1996 (1996-06), pages 886-891, XP004069576 ISSN: 0264-410X abstract page 887, left-hand column, paragraph 3 - right-hand column, paragraph 1; table 1 page 888, left-hand column, paragraph 3 page 889, left-hand column, paragraph 1 - page 890, left-hand column, paragraph 1</p> | <p>14-16, 19,20, 25-27, 29,30, 32-34, 37,38, 42-47, 52-54, 57,58, 61-63</p> |
| A | <p>US 2002/136741 A1 (GARY W. ZLOTNICK) 26 September 2002 (2002-09-26) page 1, paragraph 10 - page 2, paragraph 14 page 2, paragraph 18 page 3, paragraph 35 - page 5, paragraph 50; figure 1</p> | <p>1-63</p> |
| A | <p>JEURISSEN S H M ET AL: "INDUCTION OF MUCOSAL IMMUNOGLOBULIN A IMMUNE RESPONSE BY PREPARATIONS OF NEISSERIA-GONORRHOEAE PORIN PROTEINS" INFECTION AND IMMUNITY, vol. 55, no. 1, 1987, pages 253-257, XP000972580 ISSN: 0019-9567 abstract page 253, right-hand column, last paragraph - page 254, left-hand column, paragraph 1</p> | <p>1-63</p> |

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International application No.
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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-63

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-63

Method for reducing pain in an immunogenic composition of a hydrophobic protein by reducing the concentration of a zwitterionic detergent

2. claims: 64, 65

Method for maintaining solubility of a hydrophobic protein in an immunogenic composition by solubilizing in Triton X-100

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/043792

| Patent document cited in search report | | Publication date | | Patent family member(s) | Publication date |
|---|----|---------------------|----|----------------------------|---------------------|
| US 5084561 | A | 28-01-1992 | DE | 3809796 A1 | 05-10-1989 |
| | | | AU | 615523 B2 | 03-10-1991 |
| | | | AU | 3158189 A | 28-09-1989 |
| | | | EP | 0334278 A2 | 27-09-1989 |
| | | | JP | 2036193 A | 06-02-1990 |
| ----- | | | | | |
| US 2002136741 | A1 | 26-09-2002 | US | 6355253 B1 | 12-03-2002 |
| | | | AT | 190502 T | 15-04-2000 |
| | | | CA | 2123355 A1 | 14-11-1994 |
| | | | DE | 69423383 D1 | 20-04-2000 |
| | | | DE | 69423383 T2 | 24-08-2000 |
| | | | DK | 624376 T3 | 24-07-2000 |
| | | | EP | 0624376 A1 | 17-11-1994 |
| | | | ES | 2145072 T3 | 01-07-2000 |
| | | | GR | 3033469 T3 | 29-09-2000 |
| | | | JP | 8019396 A | 23-01-1996 |
| | | | PT | 624376 T | 31-07-2000 |
| ----- | | | | | |